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## (54) IMPROVEMENTS RELATING TO BEVERAGE DISPENSING

(71) We, SCHWEPPE'S LIMITED, a British Company of 1-6 Connaught Place, London W2, do hereby declare the invention, for which we pray that a Patent may be granted to us, and the method by which it is to be performed, to be described in and by the following statement:—

This invention relates to the cleansing of post-mix beverage dispensing systems of the type comprising a dispensing head, water supply pipes or passages and a water dispensing valve through which carbonated water can be passed to a water outlet in the dispensing head, flavoured syrup supply pipes or passages and a syrup dispensing valve through which syrup can be passed to a syrup outlet. The said water and syrup dispensing valves can be opened at the same time to enable carbonated water and flavoured syrup to be dispensed into a drinking container held adjacent the dispensing head to provide a flavoured carbonated beverage. The syrup and water outlets may lead to a common dispensing outlet or they may be separate dispensing outlets. Such dispensing systems will be referred to hereinafter and in the appended claims as "post-mix systems as set forth".

For food hygiene reasons, the pipes or passages and the syrup dispensing valve through which the syrup passes are required to be cleaned periodically. This is usually done by flushing the syrup pipes or passages and syrup dispensing valve with a detergent solution followed by flushing with clean water. In the conventional method, the syrup pipes or passages and syrup dispensing valve are cleaned by disconnecting the supply of syrup, and by first of all forcing the detergent solution through the pipes or passages and valve to the syrup outlet using a supply of CO<sub>2</sub> gas and then by similarly forcing clean water through such pipes or passages to said outlet using either a supply of CO<sub>2</sub> gas or the mains water pressure.

This conventional cleaning method has the disadvantage that the flow of cleaning liquid is in the same direction as the flow of syrup during dispensing, and this is not always effective.

The present invention seeks to obviate or mitigate the aforementioned disadvantages.

In accordance with one aspect of the present invention, there is provided the combination of a post-mix dispensing system as set forth and cleaning apparatus comprising a unit having a liquid outlet from which cleaning liquid under pressure may be forced, and a coupling adapted to connect the said liquid outlet to the syrup outlet in the dispensing head in liquid tight manner whereby cleaning liquid can be forced in back flushing manner through the syrup supply pipes or passageways and syrup dispensing valve

Preferably the coupling includes a receptacle adapted to be held in liquid tight manner to the dispensing head so that the water outlet and syrup outlet both communicate with the interior of the receptacle, and the liquid outlet connects with the interior of the receptacle through a one-way valve which prevents back flow liquid from the interior of the receptacle to the said unit enabling the syrup pipes or passageways and the syrup valve to be flushed with carbonated water supplied from the water outlet to the receptacle and then through the syrup pipes or passageways and valve.

Preferably also, the apparatus includes a clamp means by which the receptacle can be clamped to the dispensing head of the dispensing system in liquid tight manner. The clamp means may comprise a ring which fits round the receptacle, a stirrup which is connected to the ring and is for engaging over the dispensing head and a screw carried by the stirrup for tightening the receptacle to the head. The receptacle may be made of transparent or translucent

plastics material.

An embodiment of the present invention will now be described, by way of example, with reference to the accompanying drawing, wherein:—

Figures 1 and 2 respectively are diagrammatic elevations, partly in section, illustrating two stages of use of the combination in accordance with the embodiment of the invention; and

Figure 3 is a perspective view showing how the cleaning apparatus is fitted to the dispensing head of the dispensing system of the combination illustrated in Figure 1. Post-mix dispensing systems as set forth are used extensively in the catering and licensed trades, and in other locations where it is desired to dispense carbonated beverages, and it is therefore in the interests of owners or users of such systems that a simple and effective means of cleaning the system should be available. In accordance with the embodiment of the invention illustrated in the drawing, the dispensing system is arranged to be supplied with a supply of clean water from a source indicated by numeral 10 and has a carbonater vessel 12 in which the water from supply 10 is mixed with carbon dioxide gas, a refrigeration unit 14 in which the carbonated water issuing from vessel 12 is refrigerated, and a dispensing outlet 16, from which the refrigerated carbonated water issues. The pipeline connecting the unit 14 and the outlet 16 passes through a dispensing head 18, and this pipeline also contains a water dispensing valve, not shown in the drawing. The water is fed from the supply 10 through the piping to the outlet 16 by a suitable pumping means, or simply by the mains water pressure.

In addition, the system is arranged to be connected to a supply, indicated by numeral 20, a flavoured syrup. The syrup passes from the supply 20 to a refrigeration unit 22, which may be one and the same as unit 14, and from the unit 22 the syrup flows through the piping shown to a syrup outlet 24 located adjacent the outlet 16. It is to be noted that the piping for the syrup also passes through the head 18, and it is also to be noted that the head embodies a dispensing valve for the syrup, and again, this valve is not shown in the drawing. The outlets 16 and 24 could lead to a common mixture dispensing outlet in the head 18, if desired. The syrup is passed from the supply 20 to the outlet 24 by means of pressurised carbon-dioxide gas. The head 18 is also shown in Figure 3, and if reference is made to that figure, there will be seen an operating lever 26, the operation of which effects opening of the dispensing valves for the water and syrup. Normally, this lever 26 is operated by means of a cup into which the

carbonated water and syrup are simultaneously discharged in order to produce a carbonated beverage in the cup, but in Figure 3 the cleaning apparatus has been connected to the head, and therefore the outlets 16 and 24 are not visible in that figure.

The cleaning apparatus which is illustrated generally by numeral 28, comprises a unit in the form of a hand operable, reciprocable pump 21 and a coupling indicated generally by numeral 23, coupling 23 connects the pump outlet in a liquid tight manner to the syrup outlet 24. In more detail, the coupling includes a plastics material receptacle 30, screwed to a mounting sleeve 27 and having a peripheral shoulder 32. A flexible pipe 29 connects the pump outlet with the interior of receptacle 30 through one way valve 31, which prevents back flow of liquid from the receptacle to the pump. The pump has a reservoir 33 for cleaning liquid in the position shown in Figure 3, the shoulder 32 of receptacle 30 is engaged by a ring 34 of a clamping means, such means also including a U-shaped stirrup 36 which is pivotally connected to the ring 34, and on the cross-piece of the U-shape carries a clamping screw 38. Tightening of the screw in the position shown in Figure 2 clamps the receptacle 30 in a liquid-tight manner to a projecting portion 40 of the head 18, this portion being represented diagrammatically in Figure 1, and it will be seen that portion 40 is provided with the outlets 16 and 24, so that by so clamping the receptacle to the portion 40, the outlets 16 and 24 come into hydraulic communication with the interior of the receptacle. The top edge of the receptacle which against the portion 40, may be provided with a suitable sealing gasket of rubber or similar material. In order to release the apparatus from the head, it is simply a matter of loosening the screw 38.

In using the cleaning apparatus, when it is clamped to the head as shown in Figure 3, the reservoir 33 is provided with a quantity of cleaning liquid, and the syrup piping is disconnected from the supply of syrup 20, and also, if necessary, from the refrigeration unit 22. Cleaning liquid is now pumped by pump 21, from the reservoir 33, past one-way valve 31 through outlet 24, and through the syrup pipes or passageways and syrup valve effecting back flushing cleaning thereof. This operation is indicated by arrows in Figure 1. During this operation, flow of cleaning fluid through the water pipes or passageways can be prevented by keeping the water valve closed or by virtue of the delivery pressure of the water line. Next, carbonated water is forced through the outlet 16 into the container 30 by suitable opening of the dispensing valves, and the carbonated water is back flushed

through the syrup piping, as shown by the arrows in Figure 2, the syrup dispensing valve being held up for this purpose, and the valve 31 preventing flow of carbonated water to the pump 21. The back flushing liquids are simply discharged to a drain, or into a bucket. After a suitable period of back flushing, the flow of water is terminated, the receptacle 30 removed, rinsed and cleaned, for future use. The operation of cleaning may be modified. Thus back flushing with carbonated water as described may be effected before, or before and after cleaning with the cleaning liquid, which may be a 1:6 detergent/water solution.

After the cleaning, the supply 20 and refrigeration unit 22 (if disconnected) are reconnected to the syrup pipeline and the dispensing system is again ready for beverage dispensing. In some cases the refrigeration unit is omitted altogether.

In addition to the invention providing a means whereby there is a saving in carbon-dioxide gas, and also the use of additional containers is not required, the effectiveness of cleaning and flushing is, we feel, improved by using carbonated water as a scrubbing medium. Furthermore, the effectiveness of cleaning is also, we believe, improved by passing the cleaning and flushing liquid through the syrup piping in the opposite direction to normal flow, as this back flushing removes residues from difficult corners within the syrup piping.

In a modified form of cleaning apparatus, the cleaning liquid is supplied from a container to which air or gas under pressure is supplied. For example, the air under pressure (which may be supplied by a separate air pump) may be applied to the top of the cleaning fluid in the container 33 tending to force same up a dip tube leading to a central valve which is manually operable, and located at the region occupied by the pump 21 shown in Figs. 1 and 2. The unit is operable by opening of the central valve, permitting cleaning fluid to be pumped up the dip tube and along pipe 29 to the receptacle 30, and then through the syrup line, as described above. The advantage of this arrangement is that the delivery pressure on the cleaning fluid can be maintained at an even value which can be selected to be less than the delivery pressure on the carbonated water supply to prevent cleaning fluid from being pumped along the water line. For example if the water line delivery pressure were 40 p.s.i., the delivery pressure on the cleaning fluid may be of the order of 20 p.s.i. As an alternative to using air under

pressure, CO<sub>2</sub> gas under pressure may be used.

We have illustrated and described one form of apparatus using a clamp means for connecting the receptacle to the dispensing head. It is to be appreciated that the receptacle could be liquid tight connected by other means, such as by a screw-threaded connection, or by a bayonet fitting arrangement.

#### WHAT WE CLAIM IS:—

1. The combination of a post-mix dispensing system as set forth and cleaning apparatus comprising a unit having a liquid outlet from which cleaning liquid under pressure may be forced, and a coupling adapted to connect the said liquid outlet to the syrup outlet on the dispensing head in liquid tight manner whereby cleaning liquid can be forced in back flushing manner through the syrup supply pipes or passageways and syrup dispensing valve.

2. The combination of claim 1, wherein the said unit includes a pump and a reservoir for a supply of cleaning liquid.

3. The combination according to claim 2, wherein the pump is a manually operable and reciprocable pump.

4. The combination according to claim 2, wherein the pump is an air pump which is adapted to pressurize a space above cleaning liquid in said reservoir, and a manually operable central valve of said unit serves to control flow of cleaning liquid through said liquid outlet.

5. The combination of any of claims 1 to 4, wherein the coupling includes a receptacle adapted to be held in liquid tight manner to the dispensing head so that the water outlet and syrup outlet both communicate with the interior of the receptacle, and the liquid outlet connects with the interior of the receptacle through a one-way valve which prevents back flow liquid from the interior of the receptacle to the said unit enabling the syrup pipes or passageways and the syrup valve to be flushed with carbonated water supplied from the water outlet to the receptacle and then through the syrup pipes or passageways and valve.

6. The combination according to Claim 5, including a clamp means by which the receptacle can be clamped to the dispensing head of the dispensing system in liquid tight manner.

7. Apparatus according to Claim 6, wherein the clamp means comprises a ring which fits round the receptacle, a stirrup which is connected to the ring and is for engaging over the dispensing head and a

screw carried by the stirrup for tightening the receptacle to the head.

8. Apparatus according to any of Claims 5 to 7, wherein the receptacle is of transparent or translucent plastics material.

9. Apparatus according to any of claims 5 to 8, wherein the receptacle includes a rubber or similar sealing gasket by

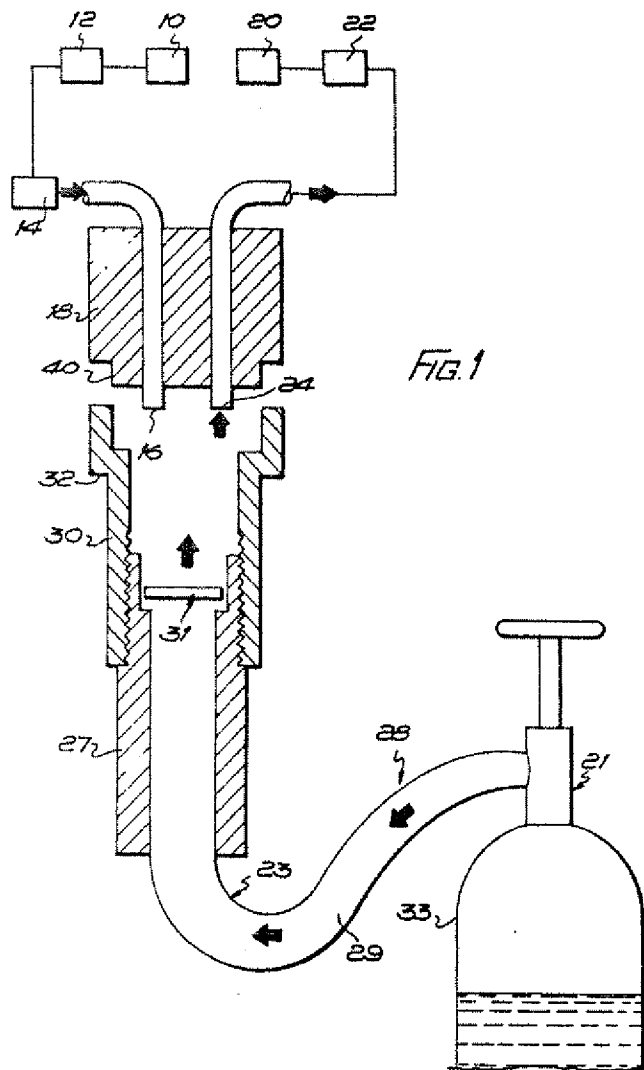
10. The combination of a post-mix dispensing system as set forth and cleaning apparatus substantially as hereinbefore de-

scribed with reference to the accompanying drawing.

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Reference has been directed in pursuance of section 9, subsection (1) of the Patents Act 1949, to patent No. 1517923.



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COMPLETE SPECIFICATION

2 SHEETS

This drawing is a reproduction of  
the Original on a reduced scale  
Sheet 2

